

# ACADEMY OF REGIONAL ANAESTHESIA OF INDIA

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ACADEMY OF REGIONAL ANESTHESIA OF INDIA



## NEWSLETTER

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### *Promise*

A 76 male with severe foot pain was admitted a typical indian farmer who had to slog in farms for daily bread. A doppler for vascularity of calf vessels suggested T A O. I spoke to him about the chances of a lumbar sympathetic block to which he agreed. A busy schedule postponed the block for several days for which he was prescribed analgesics with minimal effect.

The other day he came across in front of my car and I lowered window, in front of a good crowd he says – today if you donot go in for a block you were supposed to I will axe my foot in front of you.

It still give me chillers!!!!

**Better keep your promises  
alive**

**Dr. Sandeep Diwan**

Founder Vice President

## From the desk of **Academic Director** Tidbits From **Regional Anesthesia**

**Dr. TVS Gopal**, Founder Academic Director, AORA

**A**ugust Karl Gustav Bier (1861-1949), a surgeon by profession, was the pioneer of spinal anaesthesia. He worked under the guidance of Freidrich Von Esmarch (of the Esmarch bandage fame) at the Royal Surgical Hospital of the University of Kiel, Germany. In 1898, August Bier proposed 'cocainization of the spinal cord', and performed spinal anaesthesia in six patients undergoing lower extremity surgery, by injecting 15 mg of cocaine intrathecally. Though the patients were stable during surgery, they experienced nausea, vomiting, and headache in the immediate postoperative period.

August Bier then subjected himself to spinal anaesthesia, and instructed his assistant, one Dr Hildebrandt, to administer the injection. Unfortunately, though the needle was correctly placed, with spinal fluid flowing freely from the needle, it was noticed that the Pravaz syringe did not fit the needle. Precious cerebrospinal fluid was lost, and August Bier himself was the first reported victim of the unpleasant post dural puncture headache. This incident probably prompted him to quote thus : "medical scientists are nice people, but you should not let them treat you !"

After he recovered, August Bier proceeded to perform spinal anaesthesia with unrestrained vigour on Dr Hildebrandt. Once the cocaine was deposited in the intrathecal compartment, loss of sensation was tested by the following (sic) manouevres :

- » Needle pricks in the thigh
- » A small incision in the skin of the thigh
- » A long needle was pushed down to the femur
- » Pain was markedly diminished in the upper arm
- » A burning cigar was applied to the legs
- » Tickling of the sole of the foot with feathers
- » Strong pinching below the nipples
- » Avulsion of pubic hairs
- » A strong blow to the shin with an iron hammer
- » Traction and strong pressure on the testicles

Later that night, both celebrated the undeniable success of spinal anaesthesia

with a sumptuous meal, wine and cigars. The next day, Hildebrandt's legs became painful and bruises developed in several places, especially over the tibia where sensibility had been tested by crushing and heavy blows.

Many specific points in Bier's description of spinal anaesthesia are pertinent over a century later :

- » Spinal anaesthesia will only succeed if there is at least some backflow of cerebrospinal fluid
- » Post dural puncture headache is the most common problem after spinal anaesthesia

- » Post dural puncture headache is probably related to the amount of cerebrospinal fluid lost

August Bier's foray into spinal anaesthesia was influenced by his lecturer in internal medicine, Heinrich Quincke (1848-1922), who introduced lumbar puncture into clinical practice.

#### Reference

- *The Centennial of Spinal Anaesthesia*, Hinnerk FW Wulf; Anesthesiology 1998; 89 : 500-506.

## From the desk of **President**

**Dr. J. Balavenkat Subramanian**

Founder President, AORA

**D**ear Colleagues,  
Greetings from AORA

As an Anaesthesiologist practising for the past 16 years, I consider the major milestone that I have achieved is safe practise of Regional Blocks. I consider Regional Analgesia and alleviation of pain in the postoperative period as the biggest gift we offer to the humanity. I thank God for making me an Anaesthesiologist, for this branch of medicine is unmatched in its ability to offer the best comfort to a patient when he needs it the most. I visualise AORA as an important initiative to propagate safe practise of Regional Anaesthesia in this vast nation. Regional Anaesthesia at its best, when practised in one of the most populous countries in the world, a country where the available resources change with in every kilometer, would eventually make a huge difference in the outcome.

I think Anaesthesiologists currently could be divided into two- the one who practises Regional Anaesthesia and one who is not. It should be our endeavour to share what little we know in regional anaesthesia with our colleagues and make sure every Anaesthesiologist is equipped with the necessary knowledge, skill and attitude to practise SAFE REGIONAL ANAESTHESIA.

Our mission should be to emerge as world leaders in Regional Anaesthesia. We are bestowed with a large population and we work hard- in a decade from now we need to be a power to reckon in Regional Anaesthesia. Let us work for it unitedly like our Indian Cricket Team and stun the world.

Do be a part of this movement.....

with best regards.

## CASE REPORT

68 year old Rheumatoid cripple presented to the hospital with open fracture dislocation of the ankle at 8.30 pm and full stomach. She fell down in the first room soon after her dinner and sustained the injury. She had excruciating pain. She was restless, Pulse was 100/mt, Blood Pressure was 220/120 mmHg, Oxygen Saturation 94% on room air. Her past history was bewildering, she is a known Hypertensive, Diabetic, Coronary Artery Disease (Angio had shown Triple Vessel Disease), Hypothyroid on replacement therapy, Elevated Renal Parameters, diagnosed to have DVT 6 months prior and was on antithrombotic therapy- acitrom 2 mg/day and INR

on admission was 1.9. Cardiovascular examination on arrival indicated features of Aortic Stenosis, Echo showed moderate to severe Aortic Stenosis. Truly this case was an anaesthetic challenge.

After written informed consent the technique we chose was Continuous Popliteal Catheter placement with Contiplex D catheter and Saphenous block. The surgery was done under the block and the postoperative analgesia continued with a continuous infusion of Local Anaesthetic solution for three days. Patient discharged on the 4th day.

*The celestial had to say something.*

I got up in the morning and a bizarre thought floated across, if this was my last day what I would do!,

Would I long for happiness or Would I long for health, or would I do with enormous wealth.

Since it was the imagined last one day, non held any meaning

My eyes rose to the sky for the answer, to make that day worth.

The Celestial answered with benevolence as always "Ask yourself what would you do for your fellow humans from the gifts I GAVE YOU with such munificent hands, and you took it as your talents..., never mind".

"How much will you crave to care for somebody other than yourself today, how much capable have you made yourself for service which I could have passed on to the world through you", Again whispered the celestial.

My mind dissolved into silence, no questions, neither, answers were required, now!!

Let the quality of our service for which we are chosen be a yardstick, to appraise that we lived and how!!

**D**ear Friends,  
Thanks for reading this news letter.

To reach the highest standard of our given subject is the best way we would serve each other and our patients. We all here equivocally mean the same and have simply put this in different words.

Regional anaesthesia is candidly the best tool we have to prevent and treat perioperative pain.

The role of this subject is expanding into areas outside the operation theatres too, such as casualties, ICU, and even NICU.

Here is a case report which highlights the importance of a well placed regional block in a neonate.

And we should do all it take to make regional blocks "well placed" which is the mission of "AORA"

## CASE REPORT

### Introduction

An extensive literature review of 1045 cannulations of the radial artery in newborn infants showed that 6% of cases suffered transient ischemia and 0-5% had permanent ischemic damage.<sup>1</sup> Neonatal limb ischemia still presents considerable challenges in the management leading to damage of great magnitude, if not attended proactively. The treatment modalities are either nonsurgical such as thrombolysis, stellate ganglion block, brachial plexus block or surgical such as thrombectomy depending on the cause.

Brachial plexus blocks are recommended for upper limb ischemia<sup>2</sup> and can be performed by various approaches and different modalities. This case is reviewed to emphasize the use of ultrasound and its particular advantage in cases of vascular damage. In a distally ischemic limb any damage to the artery in its proximal portion could add to the existing damage.

### Case report

A premature (28 weeks preterm), female, 900 kg neonate was admitted in NICU. The baby had gradually gained weight to 1.1 kg. During the fifth week of the NICU stay, following accidental arterial puncture ischemic changes were noted on the right distal upper extremity as shown in figure 1. The Doppler study of the affected hand showed absent pulsations distally till the brachial



**Figure 1:** Ischemia of the affected hand subsequently catheter placed, note the improvement in the color of the hand on day 1.



**Figure 2, 3:** The placement of needle and the probe and the respective parasagittal scan of the infraclavicular region, P maj= Pectoralis major, P min= Pectoralis minor, SA= Subclavian artery.



**Figure 4 :** Catheter in place and improvement in the color of the hand on day 1.



**Figure 5:** The final result after 36 hours, the catheter has been accidentally removed

level. The decision to attempt an ultrasound-guided infraclavicular brachial plexus block was taken. Parents were explained the procedure and informed consent was obtained. The parents approved of reporting this case.

The block procedure was performed in NICU following application of routine monitors and midazolam 0.5 mg/kg was administered for sedation. Fentanyl 1µ/kg was administered to provide analgesia for the block procedure. The infant was placed in supine position with the shoulder abducted and the arm placed along the body. The ultrasound probe ((Micromax, Sonosite Medical Systems Bothell, WA, USA, L 24 probe) was placed just inferior to the coracoid process, and a 19 gauge Tuohy needle (Portex) was placed in an in-plane approach (Figure 2). This showed the parasagittal transverse scan of the infraclavicular region (Figure 3). The axillary artery and the vein were identified. The lateral and medial brachial plexus cords were identified and 0.5ml of 0.25% of bupivacaine was injected. A 23 gauge catheter was passed through the 19 gauge Tuohy needle. The neurovascular bundle was seen at the depth of 1 cm from the skin. The catheter was secured to the skin by transparent tapes at 2 cm marking. A continuous infusion syringe pump was attached to the catheter. It delivered 0.03% of bupivacaine at a rate of 0.5 ml/ hr (approx 0.15mg/kg/hour of bupivacaine). The infusion was maintained for about 36 hours when accidental dislodgement of catheter took place while the infant was being breast fed. Ischemic changes in the limb improved after a single bolus and the steadily regressed with the infusion to be limited only to the finger tips (Figure 4 and 5).

### Discussion

Although upper limb ischemia in neonates is uncommon, it has grave consequences. The treatment modalities range from systemic anticoagulation, systemic or topical vasodilators and hyperbaric oxygen.<sup>3</sup> Interventional treatment includes thrombolysis and surgical thrombectomy<sup>4</sup> (if the etiology of ischemia is due to thrombosis) and lastly amputation. Surgical procedures off course have the inherent issues of anesthesia

in neonates and prematurity. The role of stellate ganglion block in management of ischemia of hand caused by extravasation of vasopressors has been reported in adults.<sup>5</sup>

In the present case we have used continuous block technique which can be performed in NICU with appropriate monitoring, sedation and analgesia. The rationale behind successful vasodilatation following brachial plexus block (somatic block) can be explained by the fact that the post ganglionic sympathetic fibers pursue a short course in the subclavian periarterial plexus and the main sympathetic supply of the vessels in the distal part of the limb is from the main somatic nerves of the limb.<sup>6</sup> Breschan et al<sup>7</sup> reported successful use of single shot axillary brachial plexus block for treatment of severe forearm ischemia after arterial cannulation in an extremely low birth-weight infant.

Through our case report we have emphasized the use of single shot block followed by continuous infraclavicular brachial plexus block in infants. We choose this technique since the effect of single shot block is limited by its duration. Catheter Placement renders a more sustained and prolonged effect of the block. The concomitant vasodilatation and increase in microvascular circulation facilitates the treatment of the reversible component of ischemia i.e. vasospasm. Infraclavicular area renders itself well for catheter fixation as compared to axilla because of its anatomical characteristics<sup>8</sup> and limited range of movements.

Ultrasound guidance was used to enable us to perform the block under real time image. Accidental trauma to the artery and the vein were avoided since they were continuously visualized during the block performance

(accidental arterial punctures are known during blind techniques). We consider this aspect of immense importance because in a hand jeopardized due to distal vascular insufficiency any added vascular damage in the proximal portion would be a disaster.

In summary, this case shows that ultrasound guided continuous brachial plexus block is a feasible treatment option in management of neonatal ischemia in upper limb.

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## From the desk of **Vice President**

**Dr. Sandeep M Diwan**

Founder Vice President, AORA  
Department Anatomy Govt Medical Collge, Miraj

## TECHNIQUE

### **Interscalene**

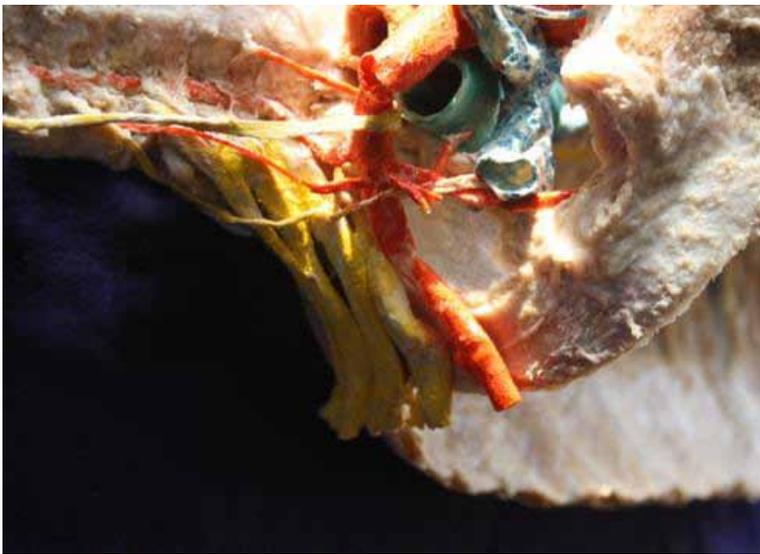
#### **Brachial Plexus Block**

The anatomic outlay shows wedging of the brachial plexus at its proximal part between the anterior and middle scalene muscle. The upper two roots join to form the upper trunk this is the C5 -6. Neurostimulation of the upper trunk stimulation will cause the contractions of the biceps and the deltoids.

### **Interscalene block :Technique.**

Head is turned towards the opposite side and not more than 30 degrees.

Head rotation can affect the orientation of neck vessels and may possibly affect the brachial plexus. This measurement was obtained from a combined ultrasound and simulating needle by rotating the head and observing the plane of brachial plexus and needle deviation.



*Acta Anaesthesiol Taiwan. 2007 Jun;45(2):73-8.*

*Ultrasound examination for the optimal head position for interscalene brachial plexus block.*

*Lu IC, Hsu HT, Soo LY, Lu DV, Chen TI, Wang JJ, Chu KS.*

Head is slightly raised to make the Sternocleidomastoid (SCM) prominent. The anterior scalene muscle is palpated immediate lateral to the S C M. Fingers are gently rolled over it and made to dip in the groove between the ASM and the MSM (Anterior and Middle Scalene muscles). This point corresponds to the C6 transverse process. Two fingers are kept on the interscalene groove. The fingers are then separated and the insulated needle should be inserted through the skin and subcutaneous tissues

Alternatively the needle is inserted at the point where the interscalene groove is maximally palpated.

After paint and drapes are done, a 25 – 50 mm stimulating needle is chosen and attached to the Peripheral nerve stimulator (PNS).

1% Xylocaine 2ml is infiltrated at the point of insertion with a 23 g needle. At times if one is sure about the needle point for penetration it is not necessary to infiltrate LA.

The direction of the needle is caudad, medially and slight posterior.

The needle is inserted into the groove perpendicular to the anterior scalene muscle. It is of prime importance to keep the needle perpendicular to the scalene muscles, least the needle tip gets directed into the spinal canal. If the needle tip hits the bony structures the tip is too deep.

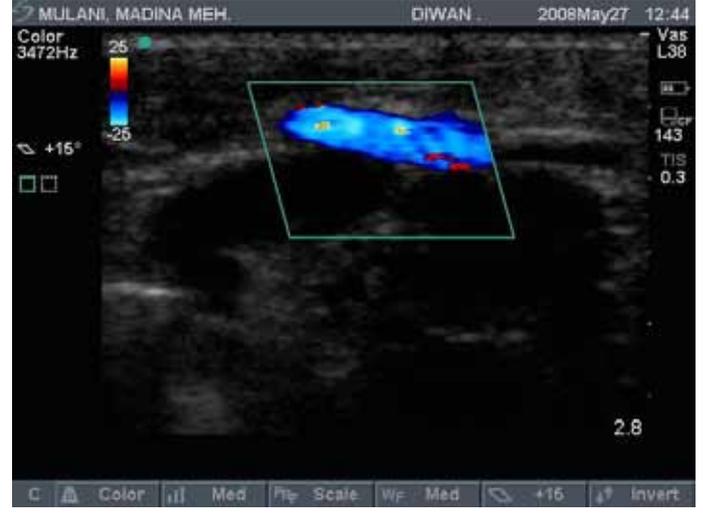
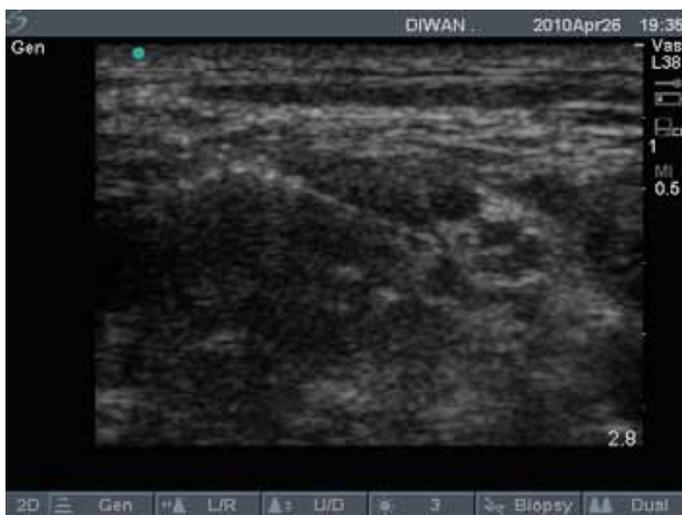
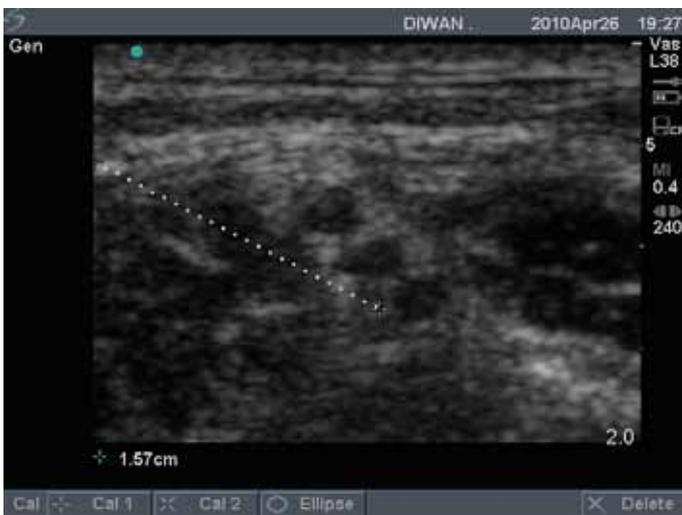
*Needle left on itself.*

The vertebral artery courses through the foramen which lies in the anterior part of transverse process. As the cervical roots of the brachial plexus leave the transverse processes, they course immediately posterior to the vertebral artery. A needle direction anteriorly and too deep might puncture the vertebral artery. Aspiration is of utmost importance as is for the other blocks. Just a few mls of 0.5% Bupivacaine in the vertebral artery and the patient will convulse on the table.



Fractures of the shaft humerus.  
 Arthroscopic shoulder surgery.  
 Bankhardts and Puttiplats for the Repair for recurrent dislocations.  
 Rotator cuff repair,  
 Acromioplasty,  
 Acromioclavicular resection, and  
 Capsular release.

**Contraindications**  
 Anatomical distorsion in the neck.  
 Coagulopathy.  
 Uncontrolled C O P D.  
 Unilateral Reccurent palsy



*Intersacalene spread of the contrast*

**Volume of drug**

Volume of drug – 2% Xylocaine and 0.5% Bupivacaine a total of 25ml in thin built and 30ml in heavily built patient.

*Indications :*

Fractures of the Proximal Humerus

Possible complications

Intraforaminal spread.

Phrenic palsy.

Intravascular injection.

Neurological complications.



### Sonoanatomy of Interscalene Brachial Plexus

The three trunks are observed as hypoechoic rounded structures squeezed between the anterior and middle scalene muscles. The probable needle path and the distance from the skin to the inferior trunk is 1.57. The subclavian artery and pleural dome should be close to the needle tip.

The needle tip is withdrawn between the superior and the middle trunk, tip is lateralized to the trunks.

The drug is injected and slowly lateralized by the side of the trunks.

In the sonoimage below a whole brachial plexus block is achieved with a single needle. The needle tip is at the

C8-T1 and slowly elevated to the superior trunk as you start injecting.

Vascular structures and some brachial anomalies are readily observed and needle path can be changed.

It was interesting to note this vascular structure passing over the interscalene groove and below the S C M. The plexus is sandwiched between the scalene. Any attempt to insert the needle into the IS groove without the ultrasound would have effectively caused a haematoma.

The needle was inserted through the middle scalene muscle and LA injected.

Post block the brachial plexus was grouped in two with a strand joining the two group of trunks.

It is always necessary to perform nerve blocks with a modality.

Neurostimulation.

Ultrasound.

Kindly post interesting cases, related stories and suggestions.

*No conflicts, No funding, No Objections for pictures  
The subject mentioned is entirely the authors view.*

**Dr. Sandeep M Diwan**

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## Forthcoming Newsletter

Case Histories.

1. Lumbar plexus block.
2. Stellate Ganglion block.
3. Postoperative pain management.

## Forthcoming Conferences

- » **Asia Oceanic Regional Anesthesia conference**  
Bali, Indonesia • 23-26 May 2011  
[www.aosra2011.org](http://www.aosra2011.org)
- » **SAARC**  
Bengaluru • 25-28 Aug 2011  
[www.saarcanaesthesiacongress.in](http://www.saarcanaesthesiacongress.in)
- » **ISACON 2011**  
Mumbai • DEC 26-29 2011 • [www.isacon2011.com](http://www.isacon2011.com)
- » **AORA 2012 Coimbatore**  
April 20-22, 2012 • [www.aoraindia.com](http://www.aoraindia.com)
- » **World Congress - Anesthesia WCA 2012**  
Buenos Aires Argentina • May 25-30 2012  
[www.wca2012.com](http://www.wca2012.com)



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